



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/924,263

08/07/2001

Satoshi Suzuki

1113-015/MMM

4904

21034

7590

09/08/2005

IPSOLON LLP

805 SW BROADWAY, #2740

PORTLAND, OR 97205

EXAMINER

AGGARWAL, YOGESH K

ART UNIT

PAPER NUMBER

2615

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,263

Applicant(s)

SUZUKI, SATOSHI

Examiner

Yogesh K. Aggarwal

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9, 12, 13, 15-19, 22-28, 31, 32, 34-38 and 40-44 is/are pending in the application.
- 4a) Of the above claim(s) 5, 10, 11, 14, 20, 21, 29, 30, 33 and 39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 12, 13, 15-19, 22-28, 31, 32, 34-38 and 40-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 16, 38 and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwai (US Patent # 6,072,527).

[Claims 1 and 16]

Iwai teaches a solid-state imaging device (figure 1, OB-integrated CCD 6) in a television camera (col. 5 line 63-col. 6 line 4) having a plurality of pixels disposed in a light-receiving region (figure 6, light receiving section 100), one or more of the photoelectric conversion elements being subject to a degree of shading from incident light, comprising two or more of the light receiving parts (photodiodes 400 in the OB section 200, col. 6 lines 65-66) disposed along the periphery of the light-receiving region (100), each light detection part being capable of outputting a signal corresponding to the degree of shading (col. 6 line 58-col. 7 line 16 and figures 6 and 7 clearly teach that photodiodes 400 in the OB region 200 are disposed along the periphery of the light-receiving region 100 and each light detection part 400 in the OB region 200 is being capable of outputting a signal corresponding the degree of shading). Iwai further teaches an image adjustor (dark shading correction circuit 501, see figure 1) for correcting degree of shading of the dark shading signal DS (col. 7 lines 34-52).

[Claim 3]

Art Unit: 2615

Iwai teaches wherein the two or more of the light receiving parts (photodiodes 400 in the OB section 200, col. 6 lines 65-66) disposed along and outside the periphery of the light-receiving region 100 (See figure 6 and 7).

[Claims 38, 44]

Method claims 38 and 44 correspond to apparatus claims 1, 3 and are therefore analyzed and rejected the same as previously discussed with respect to apparatus claims 1 and 3.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwai (US Patent # 6,072,527).

[Claim 17]

Official Notice is taken of the fact that it is very well known to have a camera as disclosed in Iwai to be a single lens reflex electronic camera in order to have a camera that is free from parallax. Therefore taking the combined teachings of Iwai and Official Notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a camera to be a single lens reflex electronic camera in order to have a camera that is free from parallax.

5. Claims 2, 4, 18, 19 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwai (US Patent # 6,072,527) in view of Kijima (US Patent # 6,614,473).

Art Unit: 2615

[Claims 2, 4 and 18]

Iwai teaches the limitations of claim 1 and 16 but fails to teach wherein the two or more light detection parts are disposed along and inside the periphery of the light- receiving region and the light-receiving region is divided into an effective pixel part, where output signals of the photoelectric conversion elements are used for image generation, and an available pixel part, where output signals of the photoelectric conversion elements are not used for image generation; and the photoelectric conversion elements of the pixels included in available pixel part are used as the light detection parts.

However Kijima teaches a light receiving region (figure 3, effective area 1a) that has been divided into a substantially effective area 21d (defined as effective pixel area used for image generation, see col. 4 lines 39-51) and a margin area 21e (margin area receives light shown in figure 3 but is not used for image generation as taught in Kijima, See col. 4 lines 57-59, which is similar to the an available pixel area as defined in applicant's specification) wherein the two or more light detection parts in the margin area are disposed along and inside the periphery of the light receiving region (effective area 1a) in order to provide a boundary area between the effective area 1a and the OB area 1b so that the fluctuation that occurs in the boundary area (margin area) is prevented from propagating toward the image output of the effective pixels, and the accurate detection of a black level and the correction can be simultaneously conducted, so that the regenerated image data can has good quality.

Therefore taking the combined teachings of Iwai and Kijima, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have two or more light detection parts disposed along and inside the periphery of the light- receiving region and the

Art Unit: 2615

light-receiving region is divided into an effective pixel part, where output signals of the photoelectric conversion elements are used for image generation, and an available pixel part, where output signals of the photoelectric conversion elements are not used for image generation; and the photoelectric conversion elements of the pixels included in available pixel part are used as the light detection parts in order to provide a boundary area between the effective area 1a and the OB area 1b so that the fluctuation that occurs in the boundary area (margin area) is prevented from propagating toward the image output of the effective pixels, and the accurate detection of a black level and the correction can be simultaneously conducted, so that the regenerated image data can has good quality as taught in Kijima (col. 4 lines 59-65).

[Claims 19]

See claim 17.

[Claim 43]

Method claim 43 corresponds to apparatus claim 43 and is therefore analyzed and rejected the same as previously discussed with respect to apparatus claim 2.

6. Claims 6-9, 12, 13, 15, 22-28, 31, 32, 34-37 and 40-42 are rejected under 35 U.S.C.

103(a) as being unpatentable over Iwai (US Patent # 6,072,527), Kijima (US Patent # 6,614,473) and further in view of Tokumitsu et al. (US Patent # 6,008,511).

[Claims 6]

Iwai teaches a microlens (figure 6, element 101) at each pixel (400) in the light receiving region (100) but fails to teach wherein each of the plural ones of the micro lenses of the available pixel part is disposed so that its optical axis is offset from the corresponding photoelectric conversion element center by a fixed distance that is predetermined for that pixel.

However Tokumitsu discloses a solid-state image sensor used inherently in devices like cameras or other imaging devices (figure 3), which comprises a plurality of light-receiving parts (pixels 3a-0, 3b-0 etc.) corresponding to different color pixels and indicating a different amount of shading arranged at a constant interval on a substrate surface and a plurality of light focusing parts (microlenses 1a-0, 1b-0, 1a-1 etc.) disposed corresponding to each of the plurality of the light-receiving parts on the substrate surface (11) so that the incident light is focused on the light receiving parts (col. 3 lines 54-64). Tokumitsu further teaches that the distances $da1$ - $da3$ (offset amounts) corresponding to the center of the microlenses 1a-1 through 1a-3 and pixels in the peripheral ends are determined to increase at a predetermined rate as the pixels become distant from the center towards the periphery (col. 3 line 65-col. 4 line 47, figure 3) so that the shading amounts of all color outputs can be minimized simultaneously by selecting pitches or shift amounts of microlenses in respective kinds of color pixels to minimize shading amounts of color outputs. As a result, shading amounts in a solid-state image sensor are reduced, and the yield of products is improved.

Therefore taking the combined teachings of Iwai, Kijima and Tokumitsu, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have plural ones of the micro lenses of the available pixel part is disposed so that its optical axis is offset from the corresponding photoelectric conversion element center by a fixed distance that is predetermined for that pixel so that the shading amounts of all color outputs can be minimized simultaneously by selecting pitches or shift amounts of microlenses in respective kinds of color pixels to minimize shading amounts of color outputs. As a result, shading amounts in a solid-state image sensor are reduced, and the yield of products is improved.

Art Unit: 2615

[Claim 7]

Tokumitsu teaches different color filters first color filters 2a-0 through 2a-3, and photodiodes 3a-0 through 3a-3. For example, the first microlens 1a-0, first color filter 2a-0 and photodiode 3a-0 make up a single color pixel. Provided for the second color different from the first color are second microlenses 1b-0 through 1b-3, second color filters 2b-0 through 2b-3 and photodiodes 3b-0 through 3b-3 (col. 3 lines 57-64).

[Claims 8 and 26]

Iwai teaches a video signal processing circuit 13 for processing a video signal outputted from the dark shading correction circuit 501 and a preamplifier 2 and a dark shading correction circuit for correcting the DS signal received from the optical black part (col. 5 line 63-col. 6 line 18).

[Claims 40-42]

Method claims 40-42 correspond to apparatus claims 6-8 and are therefore analyzed and rejected the same as previously discussed with respect to apparatus claims 6-8.

[Claims 9, 13, 15, 24, 28, 32]

Claims 9, 13, 15, 24, 28, 32 recite what was discussed with respect to claim 7.

[Claims 12, 22, 31]

Claims 12, 22 and 31 recite what was discussed with respect to claim 6.

[Claims 23, 25, 27, 35]

See claim 17.

[Claims 36, 37]

See claims 2 and 3.

Art Unit: 2615

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
September 1, 2005


DAVID L. OMETZ
SUPERVISORY PATENT
EXAMINER